

IN THE CLAIMS

The following detailed claim listing shows all claims currently pending in this case as well as the status of every claim submitted to date. The detailed claim listing includes new claims 41-50.

1. (Previously amended) A multilayer substrate to mount a die comprising:
a ceramic portion comprising an embedded capacitor having first and second terminals;
a first plurality of lands on a first surface thereof, including a first land coupled to the first terminal and a second land coupled to the second terminal, wherein the first and second lands are positioned to couple to corresponding power supply nodes of the die; and
an organic portion comprising a plurality of conductors, including a first conductor coupling the first land to the first terminal and a second conductor coupling the second land to the second terminal.
2. (Original) The multilayer substrate recited in claim 1 and further comprising a second plurality of lands on a second surface thereof, including a third land coupled to the first terminal and a fourth land coupled to the second terminal.
3. (Previously amended) The multilayer substrate recited in claim 2, wherein the pitch of the second plurality of lands is greater than the pitch of the first plurality of lands, and wherein the pitch is increased within the organic portion.
4. (Previously amended) The multilayer substrate recited in claim 2, wherein the first plurality of lands further comprises a fifth land positioned to couple to a corresponding signal node of the die, and wherein the second plurality of lands comprises a sixth land coupled to the fifth land via a conductive path that comprises one of the plurality of conductors.

5. (Previously amended) The multilayer substrate recited in claim 4, wherein the pitch of the second plurality of lands is greater than the pitch of the first plurality of lands, and wherein the pitch is increased within the organic portion.
6. (Previously amended) The multilayer substrate recited in claim 2, wherein the third and fourth lands are positioned to couple to corresponding power supply nodes of an additional substrate underlying the multilayer substrate.
7. (Original) The multilayer substrate recited in claim 1, wherein the capacitor comprises at least one high permittivity layer.
8. (Original) The multilayer substrate recited in claim 1, wherein the capacitor comprises a plurality of high permittivity layers.
9. (Original) The multilayer substrate recited in claim 8, wherein the capacitor comprises a plurality of conductive layers interleaved with the high permittivity layers, such that alternating conductive layers are coupled to the first and second lands, respectively.
10. (Original) The multilayer substrate recited in claim 1, wherein the organic portion comprises a plurality of layers, each comprising a portion of the plurality of conductors.

Claims 11-27 (Canceled)

28. (Previously amended) A method for making a substrate to package a die, the method comprising:

forming a first portion of the substrate using ceramic materials, the first portion comprising an upper surface and a lower surface and including at least one capacitor between the upper and lower surfaces, the at least one capacitor having first and second terminals;

forming a second portion of the substrate using organic materials, the second portion comprising a plurality of conductors therein, including a first conductor coupled to the first terminal and a second conductor coupled to the second terminal, the second portion overlying the first portion; and

forming a first plurality of lands on a surface of the second portion of the substrate, including a first land coupled to the first conductor, and a second land coupled to the second conductor, wherein the first and second lands are positioned to couple to first and second power supply nodes of the die.

29. (Previously amended) The method recited in claim 28, wherein forming the first portion comprises forming a first signal node, wherein forming the second portion comprises forming a third conductor coupled to the first signal node, and wherein forming the first plurality of lands comprises forming a third land coupled to the third conductor, the third land being positioned to couple to a signal node of the die.

30. (Previously amended) The method recited in claim 28 and further comprising:

forming a second plurality of lands on the lower surface of the first portion of the substrate, including a third land coupled to the first terminal, and a fourth land coupled to the second terminal, and wherein forming the second portion comprises fanning out the plurality of conductors from a first pitch of the first plurality of lands to a second pitch of the second plurality of lands.

31. (Previously added) A multilayer substrate to mount a die comprising:
a ceramic portion comprising an upper surface and a lower surface and including a capacitor located between the upper and lower surfaces, the capacitor having first and second terminals; and
an organic portion comprising an upper surface having a first plurality of lands thereon, including a first land coupled to the first terminal and a second land coupled to the second terminal, wherein the first and second lands are positioned to couple to corresponding power supply nodes of the die, the organic portion further including a plurality of conductors, including a first conductor coupling the first land to the first terminal and a second conductor coupling the second land to the second terminal.
32. (Previously added) The multilayer substrate recited in claim 31 and further comprising a second plurality of lands on the lower surface of the ceramic portion, including a third land coupled to the first terminal and a fourth land coupled to the second terminal.
33. (Previously added) The multilayer substrate recited in claim 32, wherein the pitch of the second plurality of lands is greater than the pitch of the first plurality of lands, and wherein the pitch is increased within the organic portion.
34. (Previously added) The multilayer substrate recited in claim 32, wherein the first plurality of lands further comprises a fifth land positioned to couple to a corresponding signal node of the die, and wherein the second plurality of lands comprises a sixth land coupled to the fifth land via a conductive path that comprises one of the plurality of conductors.
35. (Previously added) The multilayer substrate recited in claim 34, wherein the pitch of the second plurality of lands is greater than the pitch of the first plurality of lands, and wherein the pitch is increased within the organic portion.

36. (Previously added) The multilayer substrate recited in claim 32, wherein the third and fourth lands are positioned to couple to corresponding power supply nodes of an additional substrate underlying the ceramic portion.

37. (Previously added) The multilayer substrate recited in claim 31, wherein the capacitor comprises at least one high permittivity layer.

38. (Previously added) The multilayer substrate recited in claim 31, wherein the capacitor comprises a plurality of high permittivity layers.

39. (Previously added) The multilayer substrate recited in claim 38, wherein the capacitor comprises a plurality of conductive layers interleaved with the high permittivity layers, such that alternating conductive layers are coupled to the first and second lands, respectively.

40. (Previously added) The multilayer substrate recited in claim 31, wherein the organic portion comprises a plurality of layers, each comprising a portion of the plurality of conductors.

41. (New) A multilayer substrate to mount a die comprising:

128 a ceramic portion comprising an upper surface and a lower surface and including a capacitor located between the upper and lower surfaces, the capacitor including a plurality of conductive layers interleaved with insulating layers, the plurality of conductive layers comprising a first plurality of conductive layers to be at a first potential and a second plurality of conductive layers to be at a second potential, wherein selected ones of the first plurality of conductive layers are electrically coupled to at least a first via that penetrates an adjacent one of the second plurality of conductive layers without electrically contacting same, wherein selected ones of the second plurality of conductive layers are electrically coupled to at least a second via that penetrates an adjacent one of the first plurality of conductive layers without electrically contacting same, wherein the capacitor includes a first terminal electrically coupled to the first via, and wherein the capacitor includes a second terminal electrically coupled to the second via; and

an organic portion comprising an upper surface having a first plurality of lands thereon, including a first land coupled to the first terminal and a second land coupled to the second terminal, wherein the first and second lands are positioned to couple to corresponding power supply nodes of the die, the organic portion further including a plurality of conductors, including a first conductor coupling the first land to the first terminal and a second conductor coupling the second land to the second terminal.

42. (New) The multilayer substrate recited in claim 41, wherein the first via has a projection upon a selected one of the first plurality of conductive layers that is surrounded by the selected one of the first plurality of conductive layers.

43. (New) The multilayer substrate recited in claim 42, wherein the second via has a projection upon a selected one of the second plurality of conductive layers that is surrounded by the selected one of the second plurality of conductive layers.

44. (New) The multilayer substrate recited in claim 41, wherein the insulating layers comprise high permittivity material.

45. (New) The multilayer substrate recited in claim 41, wherein the organic portion comprises a plurality of layers, each comprising a portion of the plurality of conductors.

46. (New) The multilayer substrate recited in claim 41 and further comprising a second plurality of lands on the lower surface of the ceramic portion, including a third land coupled to the first terminal and a fourth land coupled to the second terminal.

47. (New) The multilayer substrate recited in claim 46, wherein the pitch of the second plurality of lands is greater than the pitch of the first plurality of lands, and wherein the pitch is increased within the organic portion.

48. (New) The multilayer substrate recited in claim 46, wherein the first plurality of lands further comprises a fifth land positioned to couple to a corresponding signal node of the die, and wherein the second plurality of lands comprises a sixth land coupled to the fifth land via a conductive path that comprises one of the plurality of conductors.

49. (New) The multilayer substrate recited in claim 48, wherein the pitch of the second plurality of lands is greater than the pitch of the first plurality of lands, and wherein the pitch is increased within the organic portion.

50. (New) The multilayer substrate recited in claim 46, wherein the third and fourth lands are positioned to couple to corresponding power supply nodes of an additional substrate underlying the ceramic portion.

28
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